

Claim Listing:

1. (Previously Presented) A method for removing a protecting group from a linker molecule or a synthesis intermediate comprising the steps of:

- a) applying to a surface a catalyst system comprising
  - i) a radiation sensitive compound or group, said radiation sensitive compound or group producing a catalyst when irradiated, and
  - ii) an autocatalytic compound or group, said autocatalytic compound or group generating a protecting group removing product when said autocatalytic compound is activated by said catalyst; and
- b) irradiating at least a part of said surface to remove said protecting group from the linker molecule or the synthesis intermediate.

2. (Previously Presented) The method recited in claim 1 wherein said radiation sensitive compound or group is a photosensitive compound or group.

3. (Previously Presented) The method recited in claim 1 wherein said autocatalytic compound or group is a member selected from the group consisting of a masked acid and pentafluorobenzoic acid.

Claims 4-5 (Cancelled)

6. (Previously Presented) The method recited in claim 1 wherein said synthesis intermediate is a member selected from the group consisting of a nucleotide, a DMT protected nucleotide, a polynucleotide, an amino acid, and a polypeptide.

Claims 7-11 (Cancelled)

12. (Previously Presented) The method recited in claim 2 wherein said photosensitive compound or group is a member selected from the group consisting of a photoactivated catalyst, a photoactivated acid catalyst and toluenesulfonic acid.

Claim 13 (Cancelled)

14. (Previously Presented) The method recited in claim 1 wherein said protecting group is 5' dimethoxytrityl.

15. (Previously Presented) The method recited in claim 2 wherein said photosensitive compound or group and said autocatalytic compound or group are parts of the same compound.

Claims 16-51 (Cancelled)

52. (Previously Presented) A method for removing a protecting group from a linker molecule or a synthesis intermediate comprising the steps of:

- a) applying to a surface a catalyst system comprising
  - i) a photosensitive acid compound or group, the photosensitive acid, compound, or group producing a catalyst when irradiated, and
  - ii) an autocatalytic compound or group, the autocatalytic compound or group generating a protecting group removing product when the autocatalytic compound or group is activated by the catalyst; and
- b) irradiating at least a part of said surface to remove said protecting group from the linker molecule or the synthesis intermediate.

53. (Previously Presented) The method of claim 52 wherein the photosensitive acid compound or group is a photoactivated acid catalyst.

54. (Previously Presented) The method of claim 52 wherein the autocatalytic compound or group is a member selected from the group consisting of a masked acid and pentafluorobenzoic acid.

Claim 55 (Cancelled)

56. (Previously Presented) The method of claim 52 wherein the synthesis intermediate is a member selected from the group consisting of a nucleotide, a DMT protected nucleotide, a polynucleotide, an amino acid and a polypeptide.

57. (Previously Presented) The method of claim 52 wherein the protecting group is an acid removable group.

58. (Previously Presented) The method of claim 52 wherein the photosensitive acid, compound, or group is toluenesulfonic acid.

59. (Previously Presented) The method of claim 53 wherein the photoactivated acid catalyst is selected from the group consisting of naphthoquinone diazide sulfonic acids, 2,1,4-diazonaphthoquinone sulfonic acid esters, 2,1,5-diazonaphthoquinone sulfonic acid esters, 1,1-bis[p-chlorophenyl]-2,2,2-trichloroethane, 1,1-bis[p-methoxyphenyl]-2,2,2-trichloroethane, 1,2,5,6,9,10-hexabromocyclododecane, 1,10-dibromodecane, 1,1-bis[p-chlorophenyl]-2,2-dichloroethane, 4,4-dichloro-2-(trichloromethyl)benzhydrol, hexachlorodimethylsulfone, 2-chloro-6-(trichloromethyl)pyridine, o,o-diethyl-o-(3,5,6-trichloro-2-pyridyl)phosphorothionate, 1,2,3,4,5,6-hexachlorocyclohexane, N(1,1-bis[p-chlorophenyl]-2,2,2-trichloroethyl)acetamide, tris[2,3-dibromopropyl]isocyanurate, 2,2-bis[p-chlorophenyl]-1,1-dichloroethylene, tris[trichloromethyl]triazine, 1,1-bis(chlorophenyl)-2,2,2-trichloroethanol, tris(1,2,3-methanesulfonyl)benzene, tris(trichloromethyl)triazine, and toluenesulfonic acid esters.

60. (Previously Presented) The method of claim 52 wherein the protecting group is selected from the group consisting of dimethoxytrityl, tert-butylcarbamate, trifluoroacetyl, 9-fluorenylmethoxycarbonyl, isobutyril, benzoyl, phenoxyacetyl, acetamidomethyl, acetyl, tert-amyoxy carbonyl, benzyl, benzyloxycarbonyl, 2-(4-biphenyl)-2-propyloxycarbonyl, 2-bromobenzylloxycarbonyl, tert-butyl, tert-butyloxycarbonyl, 1-carbobenzoxamido-2,2,2-trifluoroethyl, 2,6-dichlorobenzyl, 2-(3,5-dimethoxyphenyl)-2-propyloxycarbonyl, 2,4-dinitrophenyl, dithiasuccinyl, formyl, 4-methoxybenzenesulfonyl, 4-methoxybenzyl, 4-methylbenzyl, o-nitrophenylsulfonyl, 2-phenyl-2-propyloxycarbonyl, alpha-2,4,5-tetramethylbenzyloxycarbonyl, p-toluenesulfonyl, xanthenyl, benzyl ester, N-

hydroxysuccinimide ester, p-nitrobenzyl ester, p-nitrophenyl ester, phenyl ester, p-nitrocarbonate, p-nitrobenzylcarbonate, trimethylsilyl and pentachlorophenyl ester.

Claims 61-69 (Cancelled)

70. (Currently Amended) A method for removing a protecting group from a linker molecule or a synthesis intermediate comprising the steps of:

- a) applying to a surface a catalyst system comprising
  - i) a synthesis intermediate having an acid removable protecting group, and
  - ii) a photosensitive acid, compound, or group, the photosensitive acid, compound, or group producing an acid when irradiated, and
  - iii) an autocatalytic compound or group, the autocatalytic compound or group generating a protecting group removing product when the autocatalytic compound or group is activated by the acid, and
- b) irradiating at least a part of the surface with light ~~to generate an acid and~~ to remove the acid removable protecting group from the linker molecule ~~or~~ or the synthesis intermediate.

71. (Previously Presented) The method of claim 70 wherein the photosensitive acid, compound, or group is a photoactivated acid catalyst.

Claim 72 (Cancelled)

73. (Previously Presented) The method of claim 70 wherein the synthesis intermediate is a member selected from the group consisting of a nucleotide, a DMT protected nucleotide, a polynucleotide, an amino acid and a polypeptide.

74. (Previously Presented) The method of claim 70 wherein the photosensitive acid, compound, or group is toluenesulfonic acid.

75. (Previously Presented) The method of claim 71 wherein the photoactivated acid catalyst is selected from the group consisting of naphthoquinone diazide sulfonic acids, 2,1,4-diazonaphthoquinone sulfonic acid esters, 2,1,5-diazonaphthoquinone sulfonic acid esters, 1,1-bis[p-chlorophenyl]-2,2,2-trichloroethane, 1,1-bis[p-methoxyphenyl]-2,2,2-trichloroethane, 1,2,5,6,9,10-hexabromocyclododecane, 1,10-dibromodecane, 1,1-bis[p-chlorophenyl]-2,2-dichloroethane, 4,4-dichloro-2-(trichloromethyl)benzhydrol, hexachlorodimethylsulfone, 2-chloro-6-(trichloromethyl)pyridine, o,o-diethyl-o-(3,5,6-trichloro-2-pyridyl)phosphorothionate, 1,2,3,4,5,6-hexachlorocyclohexane, N(1,1-bis[p-chlorophenyl]-2,2,2-trichloroethyl)acetamide, tris[2,3-dibromopropyl]isocyanurate, 2,2-bis[p-chlorophenyl]-1,1-dichloroethylene, tris[trichloromethyl]triazine, 1,1-bis(chlorophenyl)-2,2,2-trichloroethanol, tris(1,2,3-methanesulfonyl)benzene, tris(trichloromethyl)triazine, and toluenesulfonic acid esters.

76. (Previously Presented) The method of claim 70 wherein the acid removable protecting group is selected from the group consisting of dimethoxytrityl, tert-butylcarbamate, trifluoroacetyl, 9-fluorenylmethoxycarbonyl, isobutyrl, benzoyl, phenoxyacetyl, acetamidomethyl, acetyl, tert-amyoxy carbonyl, benzyl, benzyloxycarbonyl, 2-(4-biphenylyl)-2-propyloxycarbonyl, 2-bromobenzylloxycarbonyl, tert-butyl, tert-butyloxycarbonyl, 1-carbobenzoxamido-2,2,2-trifluoroethyl, 2,6-dichlorobenzyl, 2-(3,5-dimethoxyphenyl)-2-propyloxycarbonyl, 2,4-dinitrophenyl, dithiasuccinyl, formyl, 4-methoxybenzenesulfonyl, 4-methoxybenzyl, 4-methylbenzyl, o-nitrophenylsulfenyl, 2-phenyl-2-propyloxycarbonyl, alpha.-2,4,5-tetramethylbenzyloxycarbonyl, p-toluenesulfonyl, xanthenyl, benzyl ester, N-hydroxysuccinimide ester, p-nitrobenzyl ester, p-nitrophenyl ester, phenyl ester, p-nitrocarbonate, p-nitrobenzylcarbonate, trimethylsilyl and pentachlorophenyl ester.

Claims 77-83 (Cancelled)

[REMAINDER OF PAGE INTENTIONALLY BLANK]